[From Proceedings of the Connecticut Medical Society, May, 1887.]



# CLIMACTERIC GLYCOSURIA.

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Mrs. W., aged 49, consulted me in 1872 on account of pruritus of the vulva. Examination showed the parts to be very red, with occasional whitish patches looking not unlike a follicular tonsillitis. Vaginal examination revealed the absence of uterine disease, and that there was no leucorrhœa to speak of. The catamenia had ceased some months previously and her general health (never the most robust) was better than formerly. Various lotions and ointments were used to relieve the intense itching, but with only slight and temporary effect. At last the urine was examined and found to be largely saccharine with a specific gravity of 1.036. The quantity voided was not much in excess of normal, being only two to two and a half quarts daily. The skin was but slightly dry, and there was very little thirst though the tongue had a somewhat glazed and red appearance. Careful diet was enjoined and the usual regimen for diabetes strictly established. Medicinally the saccharated carbonate of iron was administered in scruple doses three times a day, and subsequently the treatment altered and varied, until almost everything ever suggested for the disease was given a trial, but apparently without effect. The amount of sugar did not diminish, the lowest specific gravity, of which I find any record, being 1.028 and the local uneasiness and pruritus remaining, at times so intense that it was only rendered endurable by frequent bathing with borax water and keeping the parts well covered with cosmoline. One thing excited my surprise, viz.: that there was so slight emaciation and no marked failure of strength. Had it not been for the troublesome itching the patient would have called herself well. At the time I attributed her con-

tinuance of appetite and strength to the iron she took, and quite plumed myself on keeping her in such good condition. The sequel will show how correct this assumption was. For over two years this case was under my observation, remaining about the same; she then moved to quite a distance from me and I saw but little of her until the spring of 1875, when she sent for me to set a broken arm. I was quite surprised at that visit to find that although having suspended all medical treatment and resumed her ordinary diet she was looking well and her old symptoms greatly relieved. Examination of the urine showed the entire absence of sugar with a specific gravity of 1.020. The vulva was found healed, and in a perfectly natural condition and the pruritus wholly gone,— a condition of things which she attributed to leaving off the medicine. The fracture of the humerus, although a compound one, did well, and she recovered with a strong and useful arm. Occasionally I have heard from her since, and there has been no return of the symptoms of diabetes.

In February, 1874, Mrs. A., aged 47, consulted me for pruritus vulvae, stating that it had existed for several months. She said that her health was good in all other respects except that she suffered a little from thirst and dryness of the throat, and had to pass water quite frequently. Upon examination the urine was found to contain a considerable amount of sugar, though the quantity in twenty-four hours was not very large. Menstruation was regular and there was no leucorrhœa, nor any evidence of uterine disease, hence I expressed the opinion that she had diabetes, and the pruritus was simply the result of the irritation from saccharine urine. Lotions of biborate of soda and laudanum were advised locally, and the patient put on a restricted diet, with a rather gloomy prognosis as to ultimate recovery. The lotion relieved the local distress, but the sugar remained quite abundant for some years in spite of all treatment. The climacteric was passed about four years after her first treatment was begun, and, although the restricted diet had been abandoned for a long while in consequence of its not appearing to benefit her so far as the excretion of sugar was concerned, yet, after the menopause, she began to mend, and in the course of twelve or fifteen months was well of both the pruritus and the diabetic disease. I ascertained that she was living a year or two since, and that there had been no return of her trouble.

While I was acting as house physician at the New Haven Hospital, in 1863, I remember a case quite similar to the one just narrated, upon which diet had but slight influence, and there was little or no loss of flesh and strength, pruritus of the genitals being the main symptom complained of. I saw this patient a few years afterwards, and learned that shortly following the menopause the trouble subsided of its own accord, apparently, without any attention being paid to diet or medication. These three cases were brought to my recollection, by being called some months since to see Mrs. B. aged fifty-two; she had a good appetite, and was in fair condition as to strength. She had always been a very strong, vigorous woman, until some three or four years ago, when she began to suffer from pruritus of the vulva, accompanied with too frequent micturition, the urine at times passing quite involuntarily. She stated that she had consulted a number of physicians, and taken a good deal of medicine, but without relief. Her bladder had been examined by the sound and no calculus found. Her urine had frequently been analyzed, and she told that it was all right, and she not suffering from any bladder disease, and for a long time her complaint had been called chronic eczema. Upon making an inspection of the parts the vulva was found swollen and red, cracked and bleeding in places, and at the lower part of the vagina and inside the labia was a considerable deposit of a whitish material quite soft and smooth under the fingers. No uterine disease was found to exist, nor was there any leucorrhœa, except a little discharge the result of extension of the external inflammation up the vagina for a very short distance.

Microscopic examination of the whitish masses found as above mentioned, proved them to be wholly composed of fungus growth consisting of branching rods, terminated by round heads filled with spherical cells, quite identical with the yeast or sugar fungus as we see it in diabetic urine. Analysis of the urine gave evidence of quite an amount of sugar with a specific gravity of 1.028. There was a little mucous, a few blood and pus corpuscles, but no albumen. The quantity of urine in twenty-four hours was hard to determine owing to the incontinence, but was estimated as about two quarts. The patient stated that she had not menstruated for the past seven months, and for the year or two preceding the last period the menses were very irregular. Her impression was that for the past few months she had had less discomfort than pre-

viously. Lotions of biborate of soda and laudanum gave her a good deal of relief from the itching, but not complete immunity, — a solution of hyposulphite of soda, ʒi to oii gave greater comfort than any thing else. Diet and medication did not appear to influence the excretion of sugar, but opium internally enabled her to sleep and this added to her comfort. At the present time (now a little over four months since first seen by me), she is in a very comfortable condition as regards the pruritus, in fact it has almost wholly disappeared, the vulva and nates being healed and natural in size and appearance. The sugar has steadily lessened in quantity, being now only a trace — specific gravity of urine, 1.025. There is no incontinence, and about three pints are passed in twenty-four hours. She has taken no medicine since I have attended her, beyond a little opium to make her sleep, and even that but irregularly.

The particular features of these cases that interest us at the present time are glycosuria appearing in women at or near the climateric period, accompanied by but one symptom calculated to attract attention, viz : pruritus vulvae of a chronic and obstinate form, the disease continuing for several years without detriment to the general health, and subsiding spontaneously, apparently uninfluenced by treatment.

Very little is to be found in medical literature on this subject. Bulkley, speaking of eczema, says, "pruritus [vulva] depending upon glycosuria must never be forgotten and when there has been long continued itching about the genital region the urine should always be examined for sugar and other changes, such as oxaluria, lithæmia, etc."

Duhring says, "In obstinate cases sugar may be suspected. Diabetes millitus is a not uncommon cause." Jenks says pruritus "may be caused by changes in the normal condition of the urine, especially diabetes." Thomas writes, "I have so often found diabetes accompanied by these symptoms [*i. e.* pruritus pudendi] that I always examine the urine." Barnes goes a step further and alludes to the menopause as a time when it may occur — he says: "In some cases the irritation depends upon diabetes. In many of the most obstinate of these cases there is no very obvious inflammation. Some of these have been described under the head or climacteric disease." Wilson says: "I have seen it [pruritus] in young children, more frequently at puberty or the cessation of the

catamenia." Sims says pruritus "is perhaps more frequently observed at the climateric period when the menses are about to cease. Dr. West alludes to a case in which a young lady suffered severely from pruritus which turned out to be due to diabetes." Ralf mentions having "noticed that women at the change often pass considerable quantities of urine containing sugar." Neubaeur and Vogel do not allude to this period of life as showing any special tendency to diabetes, nor does Tyson in his recent article in "Pepper's System of Medicine", mention it. Roberts says: "In the female heat and itching about the vulva is a common and distressing symptom" [in diabetes], and further on he writes, "when sugar is present in quantity sufficient to interest the practitioner it is detectable with certainty by direct testing, and conversely, when direct testing reveals the presence of sugar, it is *invariably a grave pathological sign*, and not a matter of mere physiological curiosity," thus showing that he had not recognized any class of cases in which spontaneous recovery was to be expected, though he recognizes three groups of "milder types of diabetes."

"1st. When the urine is persistently sacharrine, density 1.030 to 1.043, diuresis absent or very moderate, no excessive thirst nor appetite, moderate conservation of strength and flesh, and stationary condition.

"2d. Traumatic cases of temporary or intermittent glycosuria.

"3d. Those advanced in years or of a feeble habit." Evidently alluding to those cases where the liver rather than the nervous system is the organ primarily at fault. A writer in the Gynecological annals for October, 1885, in a considerable article on the subject of diabetes, states that he finds in 114 cases among women, 70 appearing subsequent to the cessation of menstruation, and concludes that the menstrual life affords a certain immunity for women with regard to this affection, but he does not speak of the climacteric period as particularly liable to its development.

So far, to my knowledge, the only account of any similar cases to those I have just narrated, is found in a short paper by Lawson Tait, published in the *Practitioner* for June, 1886. He speaks of having had a number of cases, in his experience among women, near the climacteric, and it was the recollection of his account of them that caused me to make the microscopic examination of the whitish masses found in the vagina of my last patient. In sev-

eral of his cases the same fungus was found. He says that his "observations lead clearly to the establishment of the fact, that there seems to be a special form of diabetes in women at the menstrual period which runs a certain definite course, extending over some years and having a natural termination in recovery. It does not seem to be curable by drugs," but he adds "all the cases have given me the impression that the termination has been a natural one." He recommends hepar sulphur ointment and lotions of hyposulphite of soda and sulphuret of potassium as local applications, but has found carbolic acid and bichloride of mercury of no avail. Some of his cases did well with sulphurous acid locally. The constitutional treatment he limits to opium given in one grain doses, three times a day, with three to five grains additional at bedtime. In closing his paper he says, "roughly speaking, the conclusions I have arrived at concerning this affection are: that in the great majority of cases of eczema of the vulva, at the climacteric period, the disease is due to the presence of sugar in the urine. I have not yet come across a case, in which, having examined for sugar, I have not found it. The disease seems to begin at or near the arrest of the menstrual function, and to extend over a period of several years, then terminating, in all probability, by nature's own process. The sufferings of the patient are very much diminished and probably the duration of the disease is shortened by the liberal administration of opium, while the local trouble is best mitigated by ointments containing such substances as will arrest the process of fermentative change in sugar. So far, the best substance that I have found for the purpose, is the old fashioned hepar sulphur ointment."

The views expressed so decidedly by Tait, would seem to be confirmed by the cases cited above, viz., that there is a peculiar form of diabetes, or glycosuria, occasionally appearing at the climacteric period in women, having a natural termination in recovery after a period of a few years. As Tait does not mention any symptoms of his cases except the presence of sugar in the urine and its sequel, pruritus, it is, perhaps, hardly fair to criticise his diagnosis, but it would seem that a distinction should be made between glycosuria and diabetes. The first is a symptom, the latter a disease. We never meet with diabetes without glycosuria, but may have glycosuria which is not diabetes. In diabetes, we expect to find

besides the presence of sugar, a marked increase in the quantity of urine secreted. This was not the case in my cases. There was no thirst to speak of, no dryness of the skin, nor emaciation. There was no general pruritus of the body; no gangrene, dyspepsia, nor paralysis. Very rare indeed must be the case of diabetes in which a compound fracture of the humerus, causing two large, lacerated wounds of the integument, would heal promptly and without any unfavorable symptoms, and yet such was the case as related. Then, too, in diabetes it is common to find diet producing some effect, temporarily at least, on the excretion of sugar, but in the cases mentioned, no such result was attained, and more than all this the natural course of diabetes is to a fatal termination, while these cases all show a directly opposite tendency. Hence it would seem more correct to discard the name diabetes and consider the glycosuria as a physiological result of the peculiar condition of the system incident to that period of female life. When we recollect the peculiarly sensitive condition of the female nervous system, and the great nervous irritability existing at the time of the menopause in many women, it is easy to see, in the light of our present knowledge, a possible cause here for the appearance of sugar in the urine at this period of life. Long ago we learned that irritation of the vaso-motor center on the floor of the fourth ventricle would produce sugar in the urine, and now we know that it is not necessary for this irritation to be central, it may be ganglionic or even peripheral, any agency in fact, operating to paralyze the vaso-motor nerves of the liver, may be followed by glycosuria. Perhaps "paralysis" is not the correct word to use in this connection, since Eckhard contends that the phenomena of glycosuria are irritative rather than paralytic, but be this as it may, we know that hyperæmia of the liver is the result by which the sugar is thrown into the system and eliminated by the kidneys. Pavy has advanced a chemical theory to explain the action of hyperæmia in producing glycosuria. He considers that in healthy digestion the carbohydrates (starch and sugar) are converted not into glucose, but into maltose, which is absorbed and assimilated and converted into glycogen. For the proper production of maltose and its assimilation, a good venous blood, producing a maltose-forming ferment, is necessary. When hyperæmia of the chylopöetic vicera exists the blood reaches the liver too little de-oxygenated and a glucose-forming fer-

ment is produced. The glucose not being assimilable, passes off into the circulation and is excreted by the kidneys. Assuming the correctness of this chemical theory, it seems quite possible that the circulatory changes incident to the climacteric period in women, may, in some cases, be an altered condition of the venous blood tending to hinder complete de-oxygenation, thus aiding to form the glucose rather than the maltose ferment, and resulting in glycosuria.

The subject is an interesting one and worthy of study, and it is to be hoped and confidently expected that the light of future research will more clearly define the conditions that operate to produce these symptoms.